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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/393,768	09/10/1999	EROL BASTURK	239603PL-011	3272

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EXAMINER
FERRIS, DERRICK W

ART UNIT	PAPER NUMBER
2663	

DATE MAILED: 11/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/393,768	Applicant(s) BASTURK ET AL.
	Examiner Derrick W. Ferris	Art Unit 2663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-9, 18-25, 28 and 33,** are rejected under 35 U.S.C. 103(a) as being unpatentable over "The Sink Tree Paradigm: Connectionless Traffic Support on ATM LAN's" by Cohen et al. ("Cohen") in view of U.S. Patent No. 5,610,904 to Eng et al. ("Eng").

As to **claims 1, 18, 19, 20, 21 and 33**, Cohen presents a scheme for transferring packets using a sink tree in an ATM connection for every switch where each tree (e.g., T1 or T4) provides an efficient means of routing connectionless traffic from any switch in the network to the sink switch (root) of that tree [Top-left column, page 364]. Specifically noted is advantage number two in the reference for the ordering of cells which states: "Trees can be updated to adapt to topological changes or congestion in the network. This is achieved using a simple event-driven protocol that retains the first-in-first-out (FIFO) order of cells" [Top-left column, page 364]. With respect to ATM VC connections used in sink trees, the reference notes three segments where the problem is reduced to the second segment of maintaining a VP connection between two (or more) switches [lower-right column, page 364]. By way of example, the reference discloses transporting packets from host 4 (h4) on switch 1 (s1) to host 2 (h2) on switch 4 (s4) using sink tree 4 (T4) shown in figure 2 [page 365]. Noted in general are a first node (s1)

and a second node (s3). Following the "VCI/VPI Lookup Tables" section [starting on page 366] as an example, in general the reference discloses accessing a tag of a packet at a first node (s1). Using the table, a second node (e.g., s3) is determined using a route bias table (i.e., The PP searches in VP table CVP (s1, h4) for the key S4 [right-middle column, page 366]) and the tag is replaced after routing the first node (s1) to the second node (s3). Specifically noted are the two different values for a VPI shown in figure 4 (a) and (c) representing a "tag" with respect to a VP connection. This is furthermore taught by Cohen which states "Upon using the VP-Table to make a routing decision, an ATM PP at the source UNI replaces the received eight-bit VPI value with a new 12-bit VPI" [right-middle column, page 366].

The reference is silent to the type of routing graph used in the sink tree paradigm. Examiner notes in general that it would have been obvious to a skilled artisan prior to applicant's invention to use a direct-graph. The motivation for doing so is to preserve the sequencing of packets as is known in the art. Eng lends support to this by also disclosing a packet-based network for rooting packets based on sink-trees. Specifically, Eng notes that a "directed graph" with no cycles is called a "directed acyclic graph" and a "sink tree" is a directed acyclic graph that satisfies the following properties: (1) there is exactly one vertex, called the "root" from which no edges leave; (2) every vertex, except the root, has exactly one exiting edge; (3) there is a path from each vertex to the root; and (4) at least one vertex has at least two entering edges [column 8, lines 41-52]. Examiner notes that the sink tree (by definition) meets all four criteria for the example presented for sink tree 4 in figure 2 [Cohen page 365; emphasis left-hand column, page 367]. Noted in

figure 2, the root vertex s4 contains no edges that leave. Every vertex (e.g., s1 and s3) has exactly one exiting edge. There is a path from each vertex to the root (shown by darken line). Finally, at least one vertex (e.g., s4) has at least two entering edges. Thus examiner notes each criterion is met for a directed acyclic graph.

As both references disclose using a sink tree for transferring packets in a network, examiner notes a strong motivation to combine the subject matter as a whole for both references.

As to **claim 2**, assuming s4 is the second node as shown in figure 2 for tree 4 then the second node would be the destination node while meeting all the criteria as set forth in the rejection for claim 1.

As to **claims 3, 4, and 5**, assuming s4 is the third destination node as shown in figure 2 for tree 4 then there exists a second routing bias table that routes the packet. With respect to replacing the second tag, the reference teaches that "The VPI and VCI fields are replaced with the same values" where it is noted using a broad interpretation of the claim that the tag is hence replaced [right column, page 366].

As to **claims 6 and 22**, examiner notes that using a broad interpretation of the claim that a "normalized" tag is used with respect the VPI pair when switching (as opposed to a packet's IP address). In addition, the sink tree also selects the routing table based on the tree at the source node (i.e., the routing bias table is selected from a plurality of routing bias tables indexed by the first node).

As to **claims 7, 8, 23 and 24**, the reference teaches using a normalized VPI/VCI pair throughout the path from source to destination. In general, normalizing could be

accomplished by using a plurality of bits as shown in figure 4 for header in cell (i.e., packet). Hence using a broad interpretation of the claims the bit operations are limited by using the VPI/VCI pair.

As to **claims 9, 25 and 28**, the reference discloses constantly updating tables in a network (e.g., see the section "Sink Tree Determination and Refreshment" starting on page 368).

3. **Claims 10-17, 26-27, 29-32 and 34,** are rejected under 35 U.S.C. 103(a) as being unpatentable over "The Sink Tree Paradigm: Connectionless Traffic Support on ATM LAN's" by Cohen et al. ("Cohen") in view of U.S. Patent No. 5,610,904 to Eng et al. ("Eng") and in further view of U.S. Patent No. 6,321,271 to Kodialam et al. ("Kodialam").

As to **claims 10-14, 26-27, and 29-30**, in addition to the reasoning behind the previous rejection for the corresponding base claim(s), it is generally noted that both the Cohen reference and the Eng patent are silent on how a parent node is selected for determining the destination to another node in a tree.

Kodialam provides further guidance on the path selection for each node by also introducing a method of selecting a path using a directed graph [column 3, lines 5-20] with respect to a sink tree [column 3, lines 38-44 with emphasis on single sink] thus creating a motivation to also combine this reference as a whole with the Cohen reference and the Eng patent. Specifically, this patent discloses a two-phased approach using a using a delay metric and an administrative weight. Examiner notes that using a broad but reasonable interpretation of the claims that it would have been obvious to a skilled artisan prior to applicant's invention to use a delay metric in randomizing a packet route.

Specifically, if the properties of a network changed then the route selection would also change, and as this is not predetermined it could be broadly construed as random. Examiner notes that the second phase of administrate weights could be construed as determining the performance based on local preference as recited by the claim(s).

As to **claims 15-16 and 31-32**, the Cohen reference discloses using a predetermined path in the form of a sink tree thus preserving the FIFO order of packets in a switch. Thus each switch will preserve this order including the root switch. Also noted is that this switches could have a common tag as shown in figure 14 (c) with emphasis on page 366 in the middle-right column which states "The VPI and VCI fields are replaced with the same values".

As to **claims 17 and 34**, using a broad interpretation of the claim, it is noted that these two tags have a common entry tag (i.e., a common VPI/VCI pair) using a hashing function.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (703) 305-4225. The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

Derrick W. Ferris
Examiner
Art Unit 2663

DWF
November 8, 2002

MELVIN MARCELO
PRIMARY EXAMINER